(c) whether the technology has been used in areas having ground water affected with arsenic and leading to a number of health problems; and

(d) if not, the reasons therefor?

THE MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI PRITHVIRAJ CHAVAN): (a) and (b) Yes Sir. A technology for removal of arsenic and/or iron from ground water using ceramic membrane module has been developed by Central Glass and Ceramics Research Institute (CGCRI), a CSIR laboratory in Kolkata for community application. CSIR has not developed any technology based on microbial cum adsorbent route for production of high quality drinking water from contaminated ground water.

The technology for arsenic and iron removal is essentially a hybrid type comprising of two steps:—

(i) Adsorption of arsenic by the colloidal media particles suspended in water, and

(ii) Application of membrane based separation technique for solid-liquid separation using ceramic micro-filtration membrane modules.

The advantages are:—

(i) The level of purification achieved is as per WHO recommended limits for arsenic (<0.01 ppm) and iron (<0.3 ppm) in Drinking Water.

(ii) Simultaneous removal of Arsenic and Iron from contaminated ground water makes the technology more superior.

(iii) The technology is capable of treating ground water containing higher concentrations of arsenic (up to 2.7 ppm) and iron (up to 13 ppm).

Patents:—

The technology is patented in USA (US Patent No. 7014771, dated March 21, 2006), Bangladesh (BD5912002, dated 28.03.2002), Chile (CL605-2002 dated 28.03.2002) and Taiwan (TW91106287 dated 29.3.2002). The patent has been filed in India (NF/235/2001)

(c) CGCRI/CSIR's technology for arsenic removal has been used for purification of ground water in some of the arsenic/iron affected areas including West Bengal. There are 6 beneficiaries in West Bengal and 15 beneficiaries in North-East States. The technology is also available for societal/commercial exploitation.

(d) Does not arise.

Progress in S&T

†2962. SHRI RAJIV PRATAP RUDY: Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether it is a fact that our progress in Science and Technology is slow;

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†Original notice of the question was received in Hindi.

(b) if so, the reasons therefor;

(c) whether Government is considering to increase investment in order to speed up the pace of development in this sector; and

(d) the details thereof?

THE MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI PRITHVIRAJ CHAVAN): (a) and (b) No Sir. The number of research papers published by Indian scientists has increased from 20,514 in 1996 to 40,062 in 2006 as per the Scopus International Database. The growth rate of research papers published during this period is 7.0%, which is higher than the world average of 4.1%. The number of applications filed for Indian patents by scientists/institutions/entities working in India has also increased from 3,218 in 2003-04 to 6,040 in 2007-08.

(c) and (d) Yes Sir. The Government have enhanced the Eleventh Plan allocation for Scientific Departments to Rs. 75,304.00 Crores from Rs. 25,301.35 Crores during Tenth Plan.

Melting of Himalayan glaciers

2963. SHRIMATI SHOBHANA BHARTIA:
PROF. ALKA BALRAM KSHATRIYA:

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether Government is aware that Himalayan glaciers are melting even in winters;

(b) whether such disturbing trends have been revealed by the scientists and is a matter of serious concern;

(c) whether the Indian rivers are likely to be affected by melting of glaciers; and

(d) if so, the corrective steps taken by Government in this regard?

THE MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI PRITHVIRAJ CHAVAN): (a) to (d) Glacier recession takes place due to a combination of factors such as sub-normal precipitation (snow fall) in the catchment, higher average summer temperature and less severe winter. The studies conducted by various research organizations and the Geological Survey of India indicate recession of glaciers in the Himalaya maybe comparable to those in other parts of the world. Presently the world is in the interglacial period during which the recession of glaciers is a natural process. The glacier melting may enhance sediment mass wasting and debris production and also bring about changes in the river flow, especially in the lean season. Under the Mission on Sustaining the Himalayan Ecosystem of the National Action Plan on Climate Change, the Government plans to institutionalize and network knowledge institutions for long term glacier studies and data generation, with a view to understand the process of glacier recession for appropriate scientific intervention/s.